

Express Terms and Purpose and Rationale Statement for Work Group 9:M Occupancies Table 503

EXPRESS TERMS

TABLE 503 ALLOWABLE HEIGHT AND BUILDING AREAS^a Height limitations shown as stories and feet above grade plane. Area limitations as determined by the definition of "Area, building," per story

GROUP	HGT (feet) HGT(S)	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
		UL	160	65	55	65	55	65	50	40
M	S A	UL UL	11 UL	4 21,500	2 12,500	4 18,500	2 12,500	4 20,500	3 14,000	1 9,000

PURPOSE AND RATIONALE STATEMENT

(SFM) The purpose of this proposed amendment is to reasonably maintain the current level of fire/life safety provided by the CBC by reducing the allowable number of stories for Group M buildings constructed of Types IIB and IIIB construction from the current four stories contained in Table 503 of the 2006 IBC to two stories as currently allowed by the CBC.

It should be noted that the CBC has never allowed the non-fire-resistance rated types of construction, such as Types IIB and IIIB, as well as Type VB, to be greater than two stories in height for any occupancy unless they are protected throughout with an automatic sprinkler system. In that case, an additional story height is allowed for a total allowable height of three stories but then the designer cannot take advantage of the area increase that would otherwise be allowed with the installation of an automatic sprinkler system. So the total area of such buildings would be much less than would be the case if the additional stories were allowed as currently contained in Table 503 of the IBC.

A comparison of the calculations for determining the maximum allowable area permitted by both the CBC and the 2006 IBC based on taking advantage of the maximum increases permitted for both open space provided around the building and for the

installation of automatic sprinklers, clearly shows the excessive allowable areas permitted by the IBC as compared to the CBC as follows:

CBC Types II-1 hour/III-1 hour (Types IIB/IIIB in the IBC) for Group M Occupancies allow a maximum height of two stories and a basic allowable area of 12,000 sq ft. The maximum allowable areas are:

2 stories	96,000 sq ft total	48,000 sq ft/story
3 stories	48,000 sq ft total	16,000 sq ft/story

In contrast, for the IBC Types IIB/IIIB construction for Group M Occupancies the maximum story height allowed is four stories and the basic allowable area is 12,500 sq ft. It should also be noted that an additional 20 ft in height may be added to the total height of the building, as well, when an automatic sprinkler system is provided. This results in the following maximum allowable areas:

2 stories	93,750 sq ft total	46,875 sq ft/story
3 stories	140,625 sq ft total	46,875 sq ft/story
4 stories	140,625 sq ft total	35,156 sq ft/story
5 stories	140,625 sq ft total	28,125 sq ft/story

From this comparison it is readily obvious that the IBC will allow significantly larger buildings for the nonrated types of construction (Types IIB and IIIB) than the CBC. Even more importantly is the fact that the IBC will allow these non-fire-resistance rated building construction types for Group M Occupancies to be as tall as five stories without any built-in fire-resistive construction for the structural members while still allowing approximately 50% more total floor area than that allowed for a two story building under the CBC and approximately three times the total area allowed for a three story building by the CBC.

This is of significant concern for Group M Occupancies which generally have relatively high fire loads, as well as high densities of occupants, especially on peak shopping days during the holidays. This represents a significantly greater risk to not only the life safety of the building occupants, but also to fire fighter safety and property protection. These taller and much larger buildings are totally relying on the automatic sprinkler system to provide the necessary protection. However, automatic sprinkler systems are not infallible. In fact, a recent NFPA study on the reliability of automatic sprinkler systems has shown that for Group M Occupancies, such systems fail to operate in approximately one out of every eight fires in sprinklered buildings where the fire was judged large enough to have caused the sprinkler system to operate.

This is even more critical in California where there is a high probability of a significant earthquake occurring which will render many sprinkler systems inoperable due to ruptured water mains in municipal water supply systems and/or broken or disjointed sprinkler risers and piping. Since it has been clearly indicated in the very large earthquakes which have occurred in California, that fires often follow earthquakes. These fires can be very devastating especially with a lack of water supplies and the inability of the fire service to gain access to many of the buildings because of the

disruption caused by the earthquake and the overwhelming demands placed on the fire service by such disasters which limit the availability of their resources.

It is also interesting to note that both the IBC and the CBC consider buildings four stories or greater in height to represent additional risks for both fire and life safety. They both require exit stairway enclosures and shaft enclosures in such buildings to have their fire-resistance ratings increased from 1 hour to 2 hours. In such buildings it takes more time for the occupants to evacuate the building and fire fighting efforts become more difficult because of the building height. By eliminating the minimum 1 hour fire-resistant construction that would otherwise be required throughout by the CBC for buildings of these heights, there is greater risk that the building may collapse prematurely when exposed to an uncontrolled fire, thus jeopardizing the life safety of the escaping occupants and putting fire fighters at greater risk, while also resulting in potentially much greater property losses.